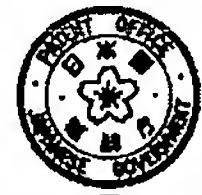


(19)



JAPANESE PATENT OFFICE

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(71) Applicant: **ATR INTERPRETING
TELECOMMUNICATIONS RES
LAB**

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(72) Inventor: **TANAKA HIDEKI**

(54) SPEAKING INTENTION RECOGNIZING DEVICE

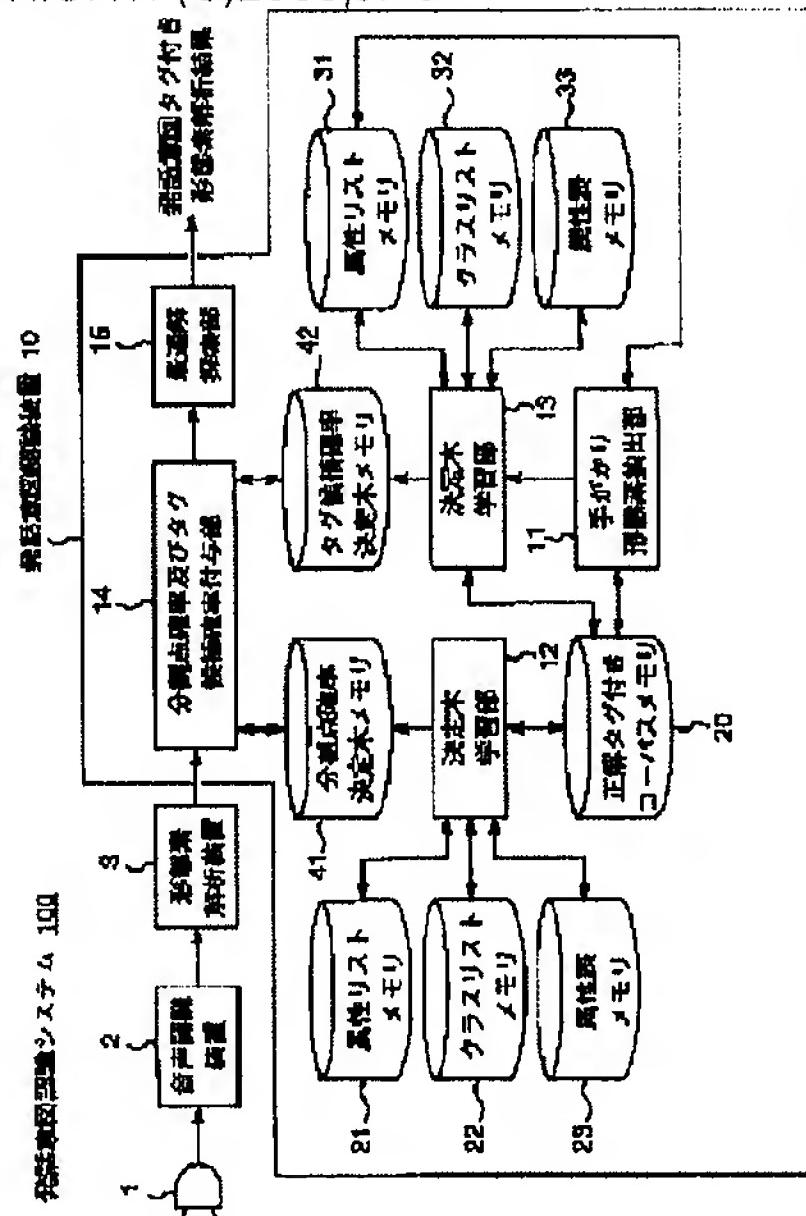
(57) Abstract:

PROBLEM TO BE SOLVED: To provide a speaking intention recognizing device which can perform accurate recognition even if there are more than one speaking intentions.

SOLUTION: A clue morpheme extraction part 11 extracts a clue morpheme having a large relativity to each speaking intention according to corpus data with a correct answer, a decision tree learning part 12 learns to generate a division-point probability decision tree which is divided depending upon attribute values of respective attributes according to the corpus data to determine division point probability, and a decision tree learning part 13 learns to generate a tag candidate probability decision tree which is divided depending upon the attribute values of the prescribed attributes according to the corpus data to determine imparting probability for impart a speaking intention tag. A division-point probability and tag candidate probability imparting part 14 calculates division-point probability and tag candidate probability by referring to the division-point probability decision tree and tag candidate

probability decision tree for the morpheme-analyzed character string and an optimum solution search part 15 searches for and outputs the solution for a speaking intention tag having larger product of the two probability values.

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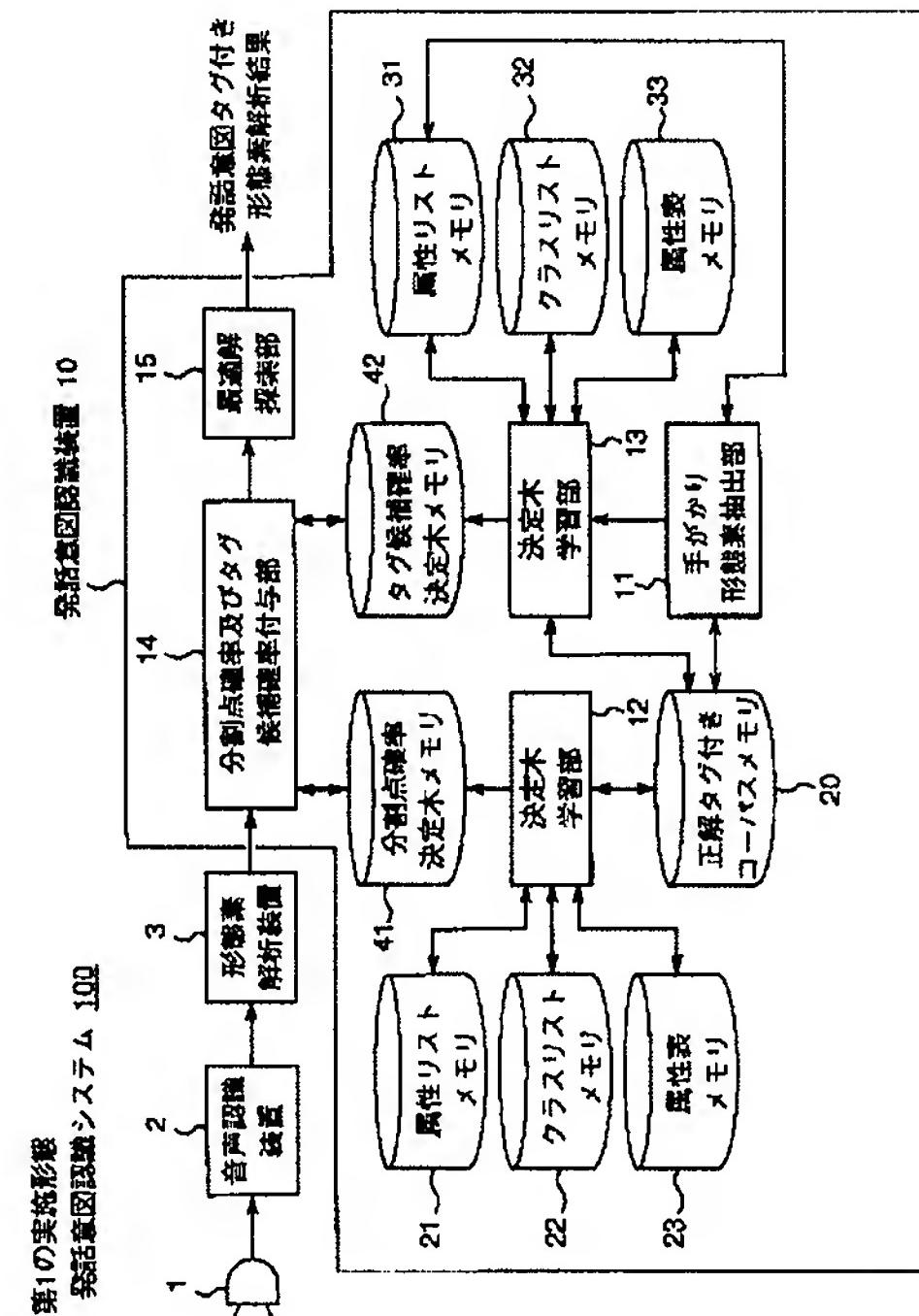
(72)発明者 田中 英輝

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弁理士 青山 葦 (外2名)

(54)【発明の名称】 発話意図認識装置



$$(T_h, U_h) = \underset{T, U}{\operatorname{argmax}} P(T, U | M)$$

$$(T_h, U_h) \\ = \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n P(t_i, u_i | t_1, \dots, t_{i-1}, u_1, \dots, u_{i-1}, M)$$

$$(T_h, U_h) \\ = \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n P(u_i | t_1, \dots, t_{i-1}, u_1, \dots, u_{i-1}, M) \\ \times P(t_i | t_1, \dots, t_{i-1}, u_1, \dots, u_i, M)$$

$$(T_h, U_h) \\ = \underset{T, U}{\operatorname{argmax}} \prod_{i=1}^n \{P(u_i | T_1^{i-1}, U_1^{i-1}, M) \times P(t_i | T_1^{i-1}, U_1^i, M)\}$$

$$\begin{aligned}
& P(u_i | T_1^{i-1}, U_1^{i-1}, M) \\
&= P(m_{last(i-1)}^{(i-1)} \nabla m_1^{(1)} | h_i) P(m_{last(i-1)}^{(i)} \nabla m_1^{(i+1)} | h_i) \\
&\quad \times \prod_{j=1}^{last(i)-1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_i)
\end{aligned}$$

$$\begin{aligned}
& (Th, Uh) \\
&= \underset{\Pi}{\operatorname{argmax}} \prod \{ P(m_{last(i-1)}^{(i-1)} \nabla m_1^{(1)} | h_i) P(m_{last(i-1)}^{(i)} \nabla m_1^{(i+1)} | h_i) \\
&\quad \times \prod_{j=1}^{last(i)-1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_i)
\}
\end{aligned}$$

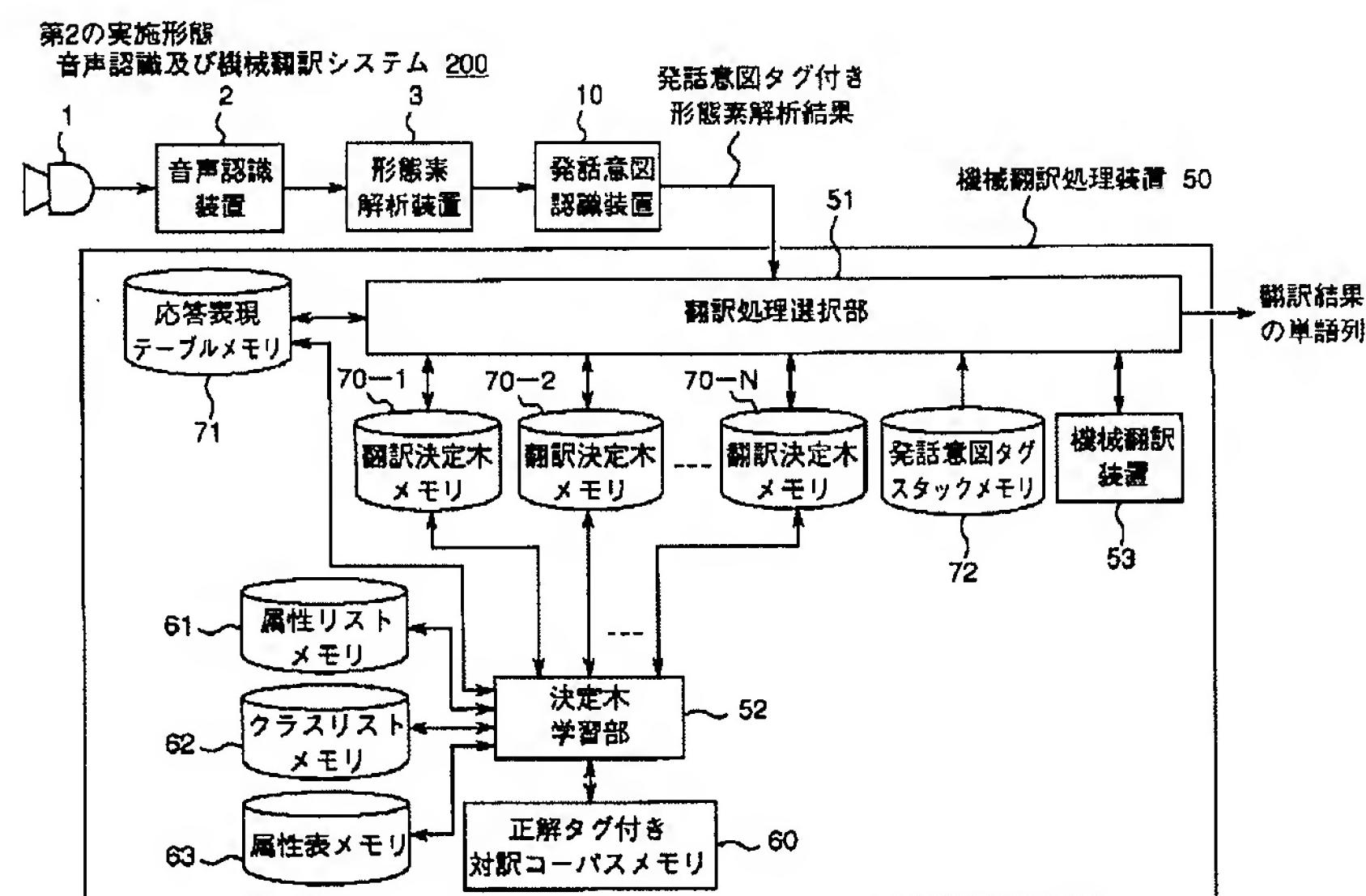
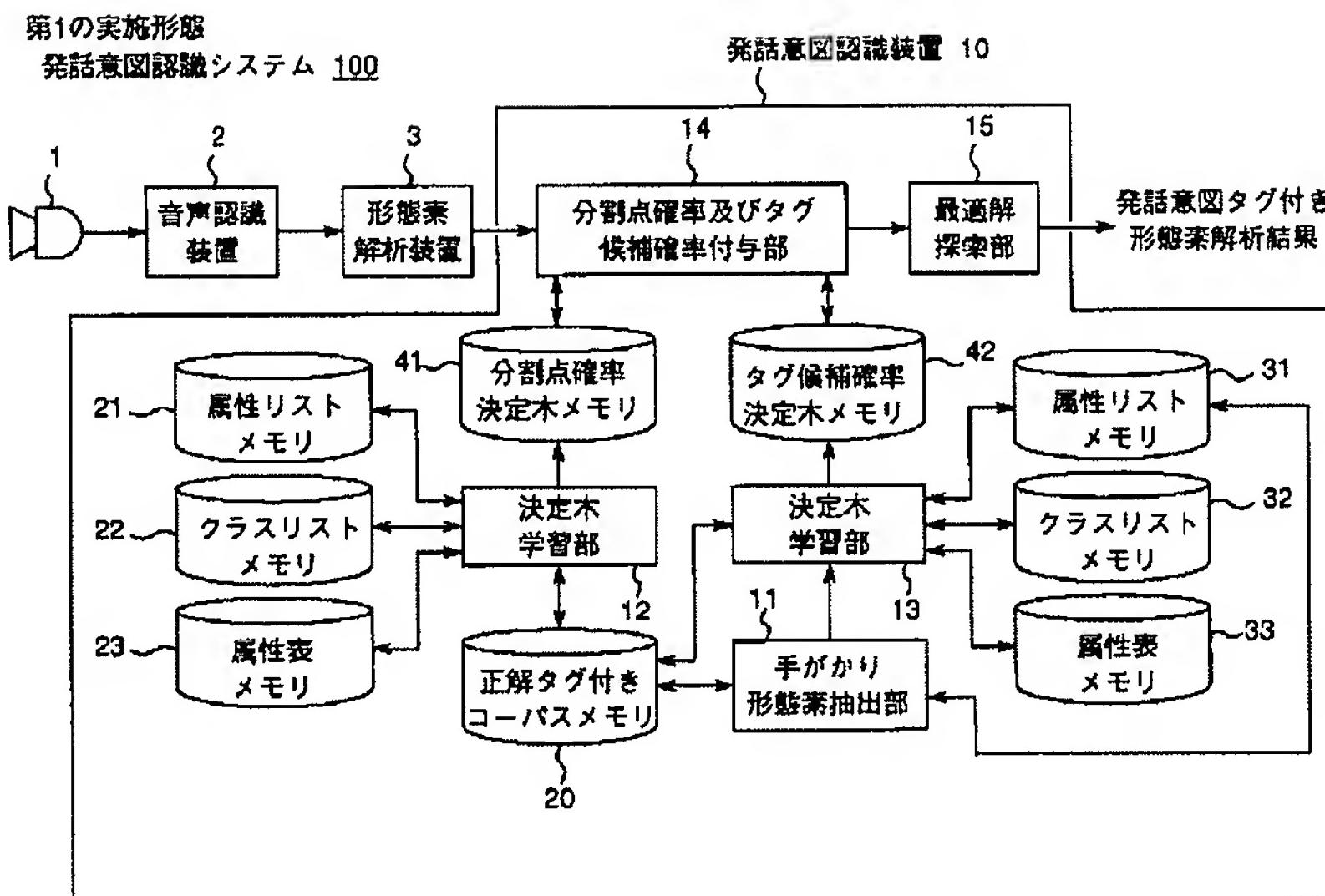
$$\begin{aligned}
& \times P(t_i | h_i) \}
\end{aligned}$$

$$\begin{aligned}
& P(m_{last(i-1)}^{(i-1)} \nabla m_1^{(1)} | h_i) P(m_{last(i-1)}^{(i)} \nabla m_1^{(i+1)} | h_i) \\
&\quad \times \prod_{j=1}^{last(i)-1} P(m_j^{(i)} \rightarrow m_{j+1}^{(i)} | h_i)
\end{aligned}$$

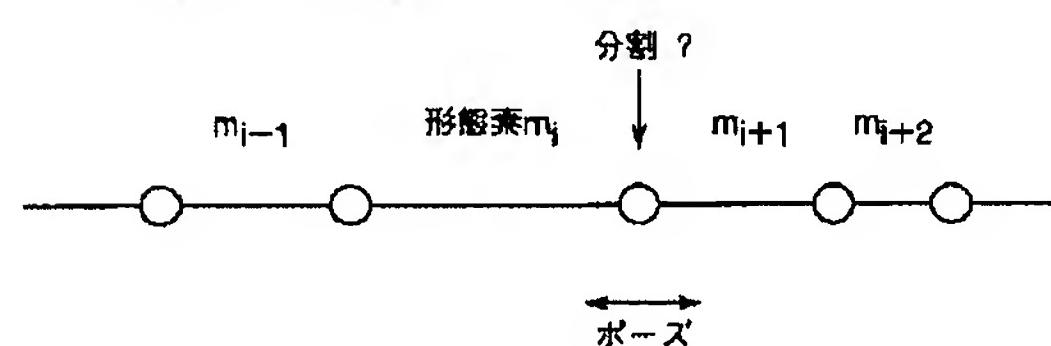
$$H_o(C) = - \sum_{i=1}^k \{ |C_i| / |C| \} \log_2 \{ |C_i| / |C| \}$$

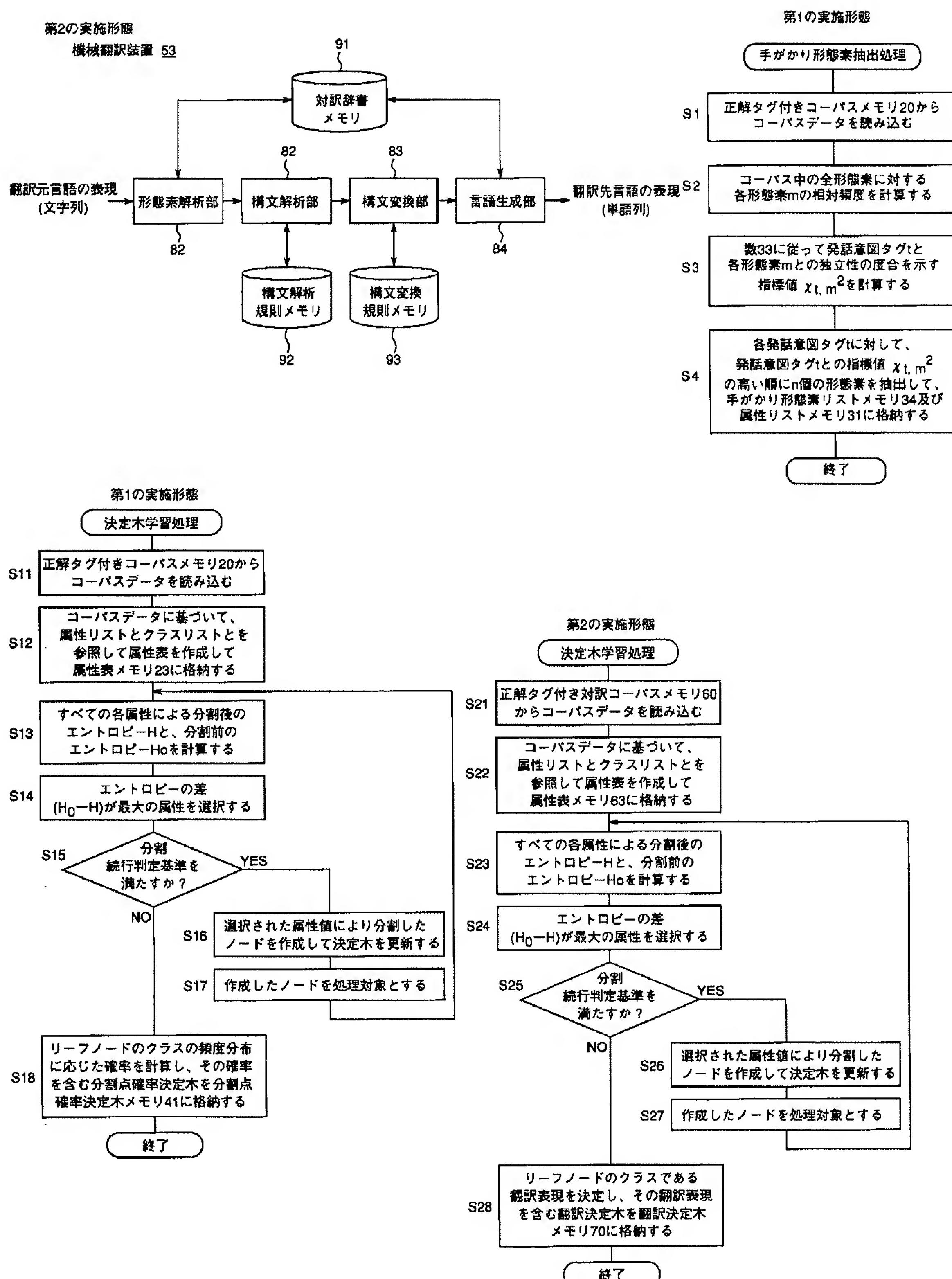
$$H(C | a_i) = \sum_{j=1}^m |B_j| / |C| H_o(B_j)$$

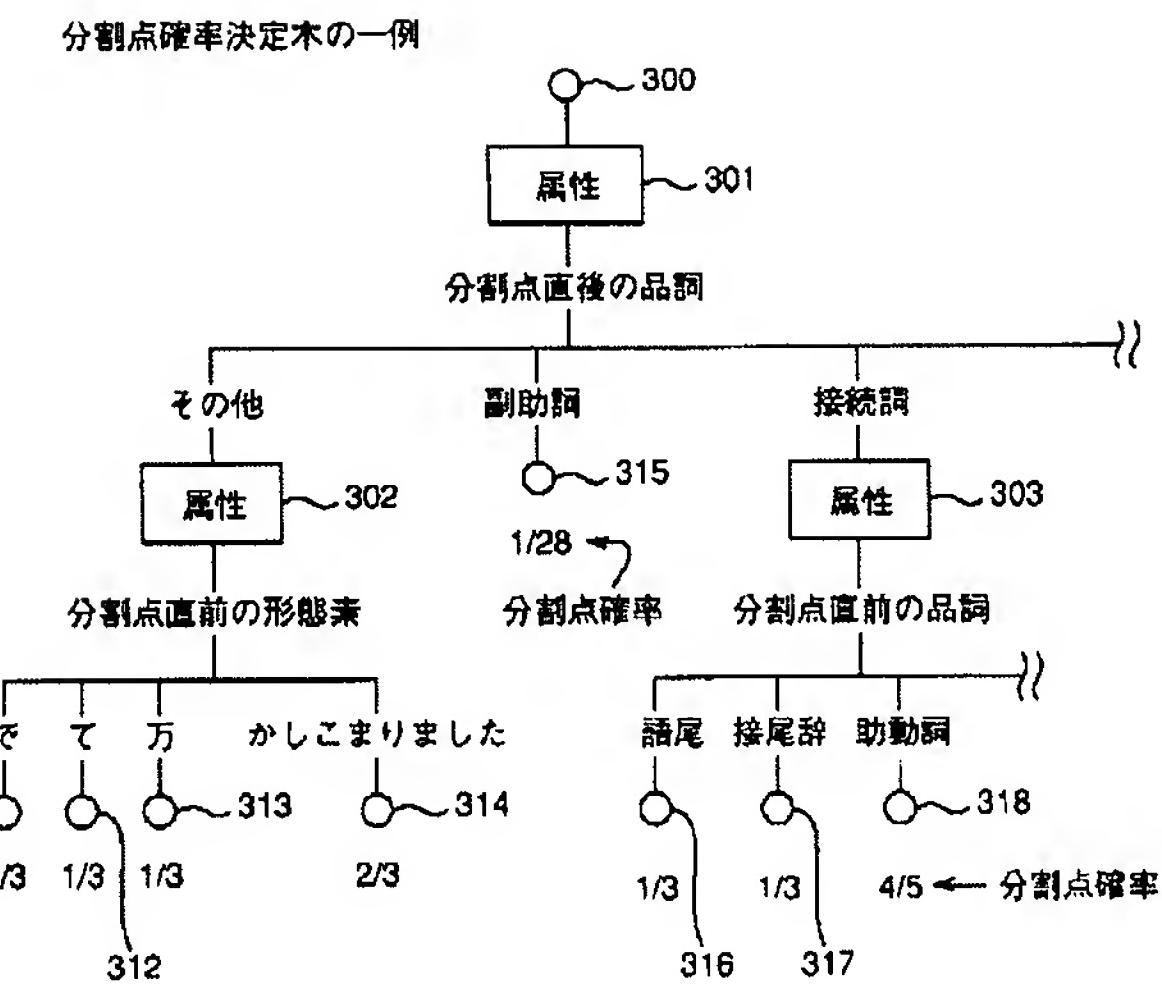
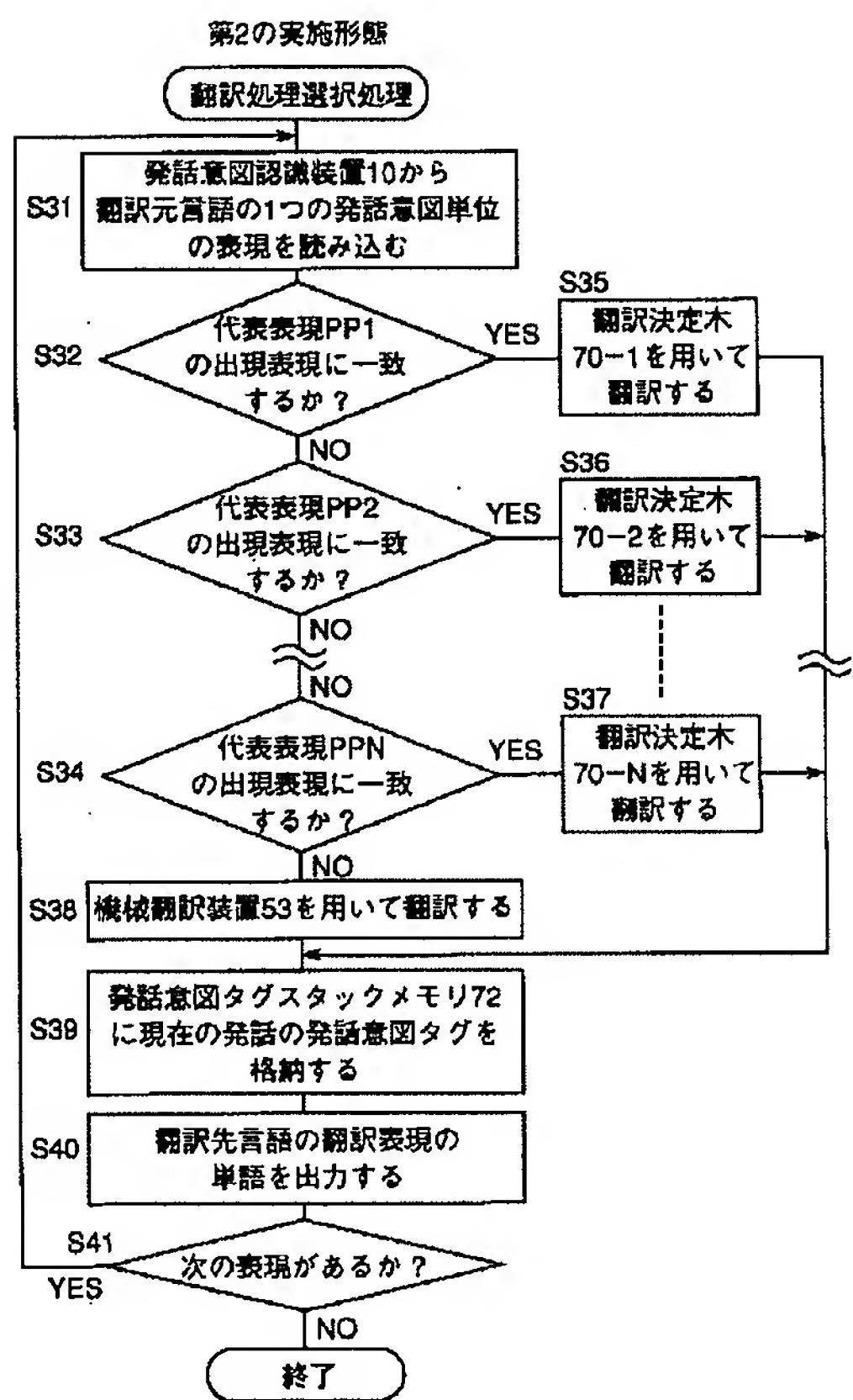
- (1) クラス：翻訳先言語での翻訳表現（文字列）。
- (2) 属性リスト：
 - (a) 現発話の発話意図タグ。
 - (b) 現発話の出現表現。
 - (c) 過去の発話意図タグ。
 - (d) 話者。



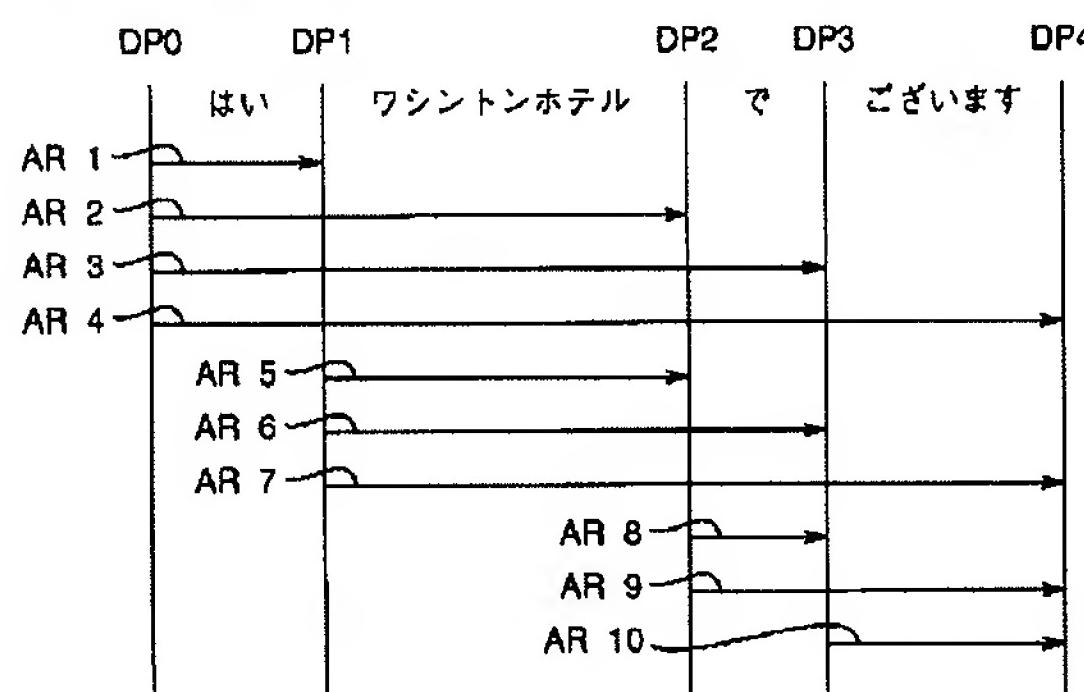
**第1の実施形態
分割に用いる情報**



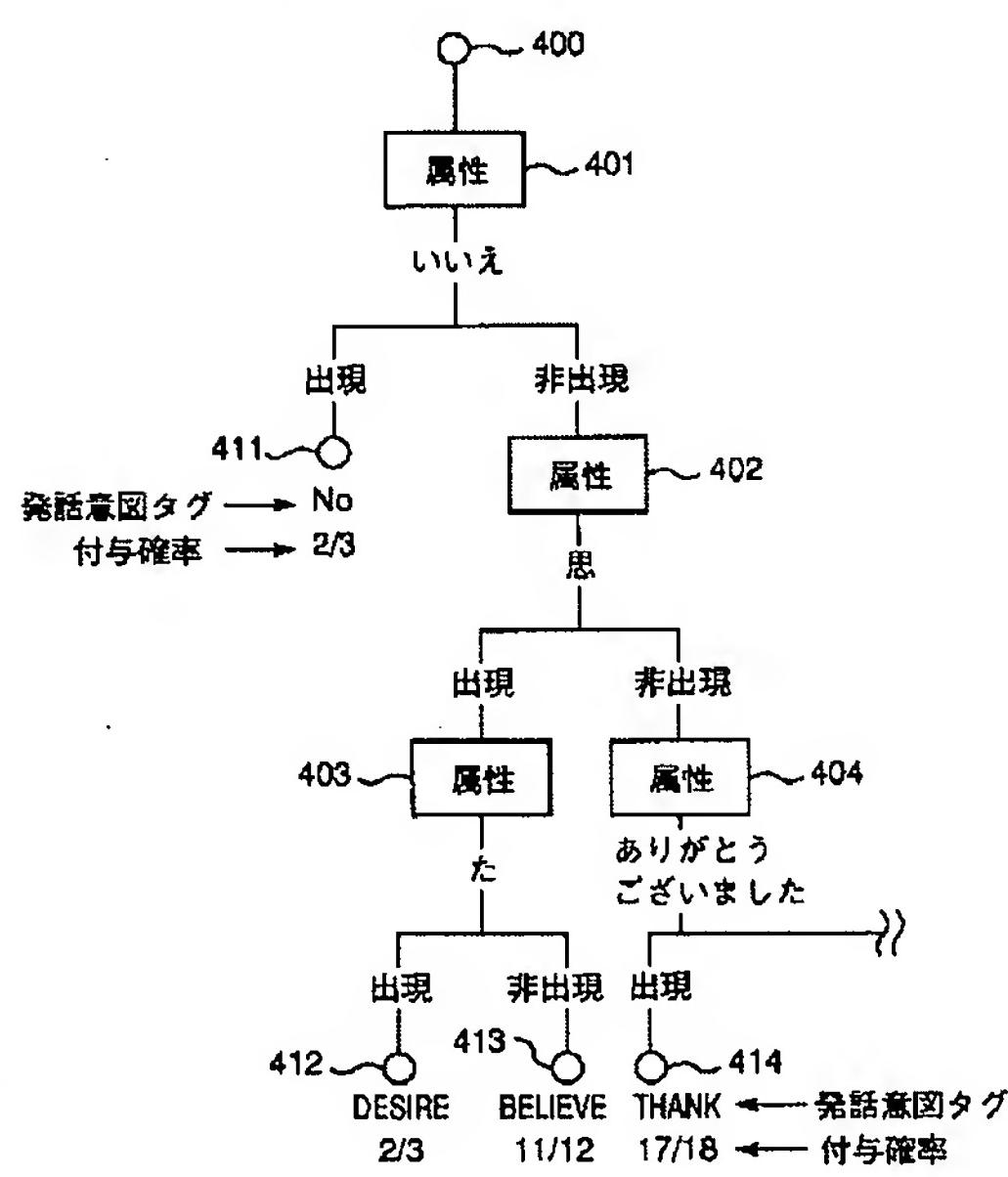




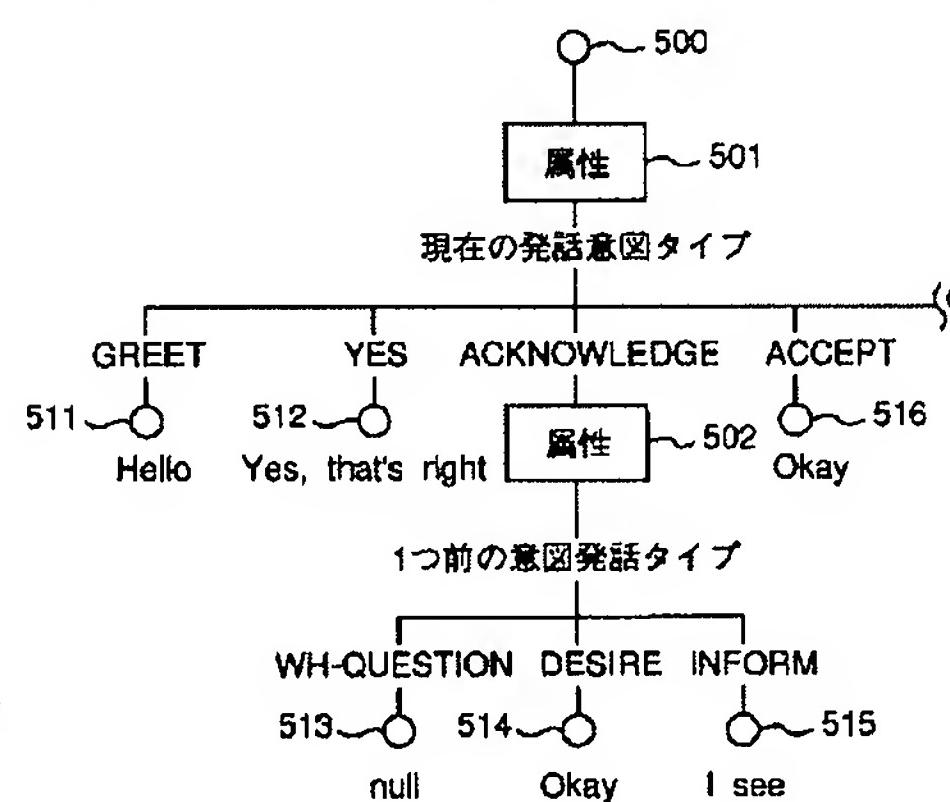
第1の実施形態の処理例



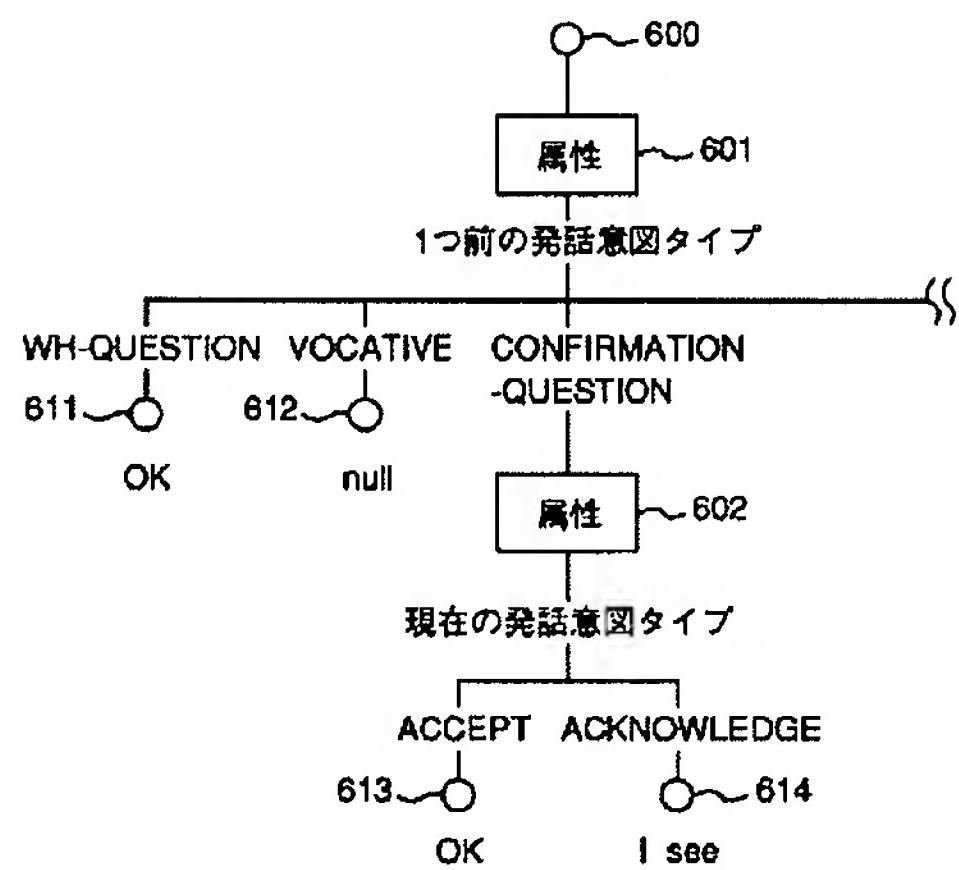
タグ候補確率決定木の一例



第2の実施形態
代表表現「はい」の翻訳決定木の一例



代表表現「かしこまりました」の翻訳決定木の一例



代表表現「わかりました」の翻訳決定木の一例

